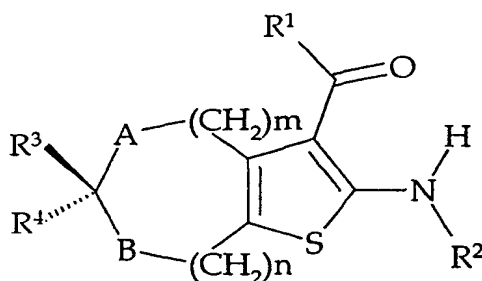


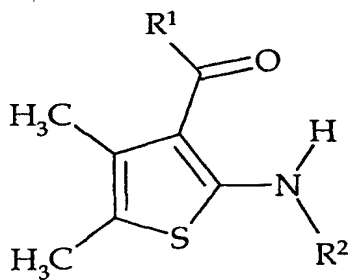
WHAT IS CLAIMED IS:

[c1] A method for providing cardioprotection, neuroprotection, pain management, reduction of free fatty acids, triglycerides, or glucose levels, adjunct therapy in diabetes, treatment of GI disorders, treatment of glaucoma; treatment of sleep disorders; treatment of cardiac disarrhythmias (peroxysmal supraventricular tachycardia, treatment of congestive heart failure or treatment of inflammation comprising administering to a patient in need of treatment thereof an effective amount to treat the disorder of a compound selected from a group consisting of compounds of formulas IA and IB:

(IA)

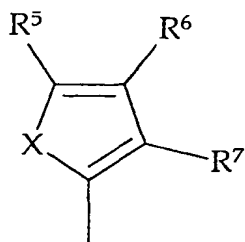


(IB)

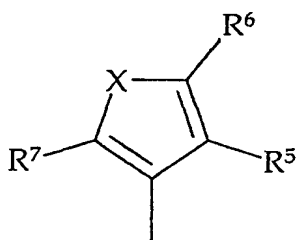


wherein:

R¹ is



or



wherein R² is H, C(=O)R⁸;

R⁸ is H, alkyl, substituted alkyl, aralkyl, substituted aralkyl, aryl, or substituted aryl;

R³ and R⁴ are independently H, alkyl, substituted alkyl, aryl, substituted aryl, aralkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, halogen, hydroxy, alkylsulfonyloxy, arylsulfonyloxy, substituted arylsulfonyloxy, alkoxy, alkylthio, or arylthio;

or if R³ and R⁴ are both alkoxy or alkylthio, may form a 1,3-dioxolan-2-yl, 1,3-dioxan-2-yl, 1,3-dithiolan-2-yl, or 1,3-dithian-2-yl group;

or together R³ and R⁴ may form a carbonyl oxygen;

R⁵, R⁶, and R⁷ are independently H, alkyl, substituted alkyl, aryl, substituted aryl, halogen, hydroxy, nitro, amino, substituted amino, disubstituted amino, alkoxy, aryloxy, alkylthio, arylthio, sulfonamido, or substituted sulfonamido;

or together R⁵ and R⁶ or R⁶ and R⁷ may be CH=CH-CH=CH, such that they form a fused aromatic ring;

A and B are independently O, S, or N-R⁸;
or A and B may independently represent a carbon-carbon single bond; m
and n are independently 0, 1, 2, or 3;

except that A and B cannot both represent a carbon-carbon single
bond when m and n are both 0; and

X is CH=CH, CH=N, N=CH, O, S, or N-R⁸.

[c2] The method of claim [c1], wherein the cardioprotection involves short term
protection during surgical procedures selected from the group consisting of
percutaneous angioplasty (PTDA), angioplasty, and cardiac surgeries.

[c3] The method of claim [c1], wherein the cardioprotection involves long term
protection from myocardial infarction.

[c4] The method of claim [c1], wherein the neuroprotection involves stroke
prevention, stroke treatment, or the treatment of epilepsy.

[c5] The method of claim [c1], wherein the pain management involves the
treatment of diabetic neuropathy, post herpetic neuralgia or other forms of
neuropathic pain.

[c6] The method of claim [c5] wherein the treatment involves acute intravenous
injection, chronic oral administration or chronic intravenous injection.

[c7] The method of claim [c1], wherein the treatment of diabetes includes the
treatment of insulin and non-insulin dependent diabetes mellitus, the
stimulation of insulin secretion from the pancreas, or the increase in tissue
sensitivity to insulin.

[c8] The method of claim [c1], wherein the treatment of GI disorders involves
treating a disorder selected from the group consisting of diarrhea, irritable
bowel disease, irritable bowel syndrome, and incontinence.

[c9] The method of claim [c1] wherein the compound is selected from compounds
of formula (IA).

[c10] The method of claim [c1] wherein the compound is selected from compounds

of formula (IB).

[c11] The method of claim (c1) wherein the compound is selected from the group comprising:

- (2-Amino-4, 7-dihydro-5H-thieno[2, 3-c]thiopyran-3-yl)-phenyl-methanone
- 5 (2-Amino-4,7-dihydro-5H-thieno[2,3-c]thiopyran-3-yl)-(4-chlorophenyl)-methanone
- (2-Amino-4,5-dihydrothieno[2,3-b]thiophen-3-yl)-(4-chlorophenyl)-methanone
- (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-furan-2-yl-methanone
- (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-thiophen-2-yl-methanone
- (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-naphthalen-1-yl-methanone
- 10 (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-naphthalen-1-yl-methanone
- (2-Amino-4,5-dimethylthiophen-3-yl)-naphthalen-1-yl-methanone
- (2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-naphthalen-1-yl-methanone
- N-[3-(Furan-2-carbonyl)-4,5,6,7-tetrahydrobenzo[b]thiophen-2-yl]-acetamide
- 15 (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-furan-2-yl-methanone
- (2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-furan-2-yl-methanone
- (2-Amino-4,5-dimethylthiophen-3-yl)-furan-2-yl-methanone
- (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-benzofuran-2-yl-methanone
- 20 (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-benzofuran-2-yl-methanone
- (2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-benzofuran-2-yl-methanone
- 2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-pyridin-2-yl-methanone
- (2-Amino-4,5-dimethylthiophen-3-yl)-benzofuran-2-yl-methanone
- 25 (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-pyridin-2-yl-methanone
- (2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-pyridin-2-yl-methanone
- (2-Amino-4,5-dimethylthiophen-3-yl)-pyridin-2-yl-methanone
- (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-(4-bromonaphthalen-1-yl)-methanone
- 30 (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-(4-methoxynaphthalen-1-yl)-methanone
- (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-(4-iodonaphthalen-1-yl)-methanone
- 35 (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-(4-chloronaphthalen-1-yl)-methanone

(2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(4-iodonaphthalen-1-yl)-methanone

(2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(4-methoxynaphthalen-1-yl)-methanone

5 (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(4-chloronaphthalen-1-yl)-methanone

(2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(4-bromonaphthalen-1-yl)-methanone

(2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-naphthalen-2-yl-methanone

10 (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-naphthalen-2-yl-methanone

(2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-naphthalen-2-yl-methanone

(2-Amino-4,5-dimethylthiophen-3-yl)-naphthalen-2-yl-methanone

(2-Amino-6-spiro(1,4-dioxolan-2-yl)-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(4-chlorophenyl)-methanone

15 (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-thiophen-2-yl-methanone

(2-Amino-4,5-dimethylthiophen-3-yl)-thiophen-2-yl-methanone

(2-Amino-6-hydroxy-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(4-chlorophenyl)-methanone

20 (2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-thiophen-2-yl-methanone

(2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(5-bromothiophen-2-yl)-methanone

(2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-(5-bromothiophen-2-yl)-methanone

25 (2-Amino-4,5-dimethylthiophen-3-yl)-(5-bromothiophen-2-yl)-methanone

(2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-(5-bromothiophen-2-yl)-methanone

(2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(5-chlorothiophen-2-yl)-methanone

30 (2-Amino-5,6-dihydrocyclopenta[b]thiophen-3-yl)-(5-chlorothiophen-2-yl)-methanone

(2-Amino-4,5-dimethylthiophen-3-yl)-(5-chlorothiophen-2-yl)-methanone

(2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-(5-chlorothiophen-2-yl)-methanone

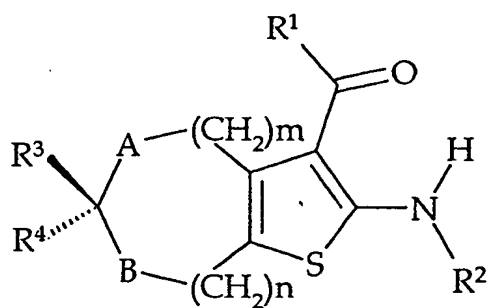
35 (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-thiophen-3-yl-methanone

- (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-thiophen-3-yl-methanone
 (2-Amino-4,5-dimethylthiophen-3-yl)-thiophen-3-yl-methanone
 (2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-thiophen-3-yl-methanone
- 5 [2-Amino-6-(4-methoxyphenyl)-4H-1,5,7-trithia-inden-3-yl]-naphthalen-1-yl-methanone
 [2-Amino-6-(4-methoxyphenyl)-4H-1,5,7-trithia-inden-3-yl]-(4-chloro-phenyl)-methanone
 [2-Amino-6-(4-methoxyphenyl)-4H-1,5,7-trithia-inden-3-yl]-thiophen-2-yl-
- 10 methanone
 (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(9H-fluoren-2-yl)-methanone
 (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-(9H-fluoren-2-yl)-methanone
 (2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-(9H-fluor-en-2-yl)-methanone
- 15 [2-Amino-6-[(methanesulfonyl)oxy]-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl]-(4-chlorophenyl)-methanone
 [2-Amino-6-(4-chlorobenzyl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl]-naphthalen-2-yl-methanone
 2-Amino-6-(4-fluorobenzyl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl]-
- 20 naphthalen-2-yl-methanone
 (2-Amino-6-benzyl-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-naphthalen-2-yl-methanone
 [2-Amino-6-(2-fluorobenzyl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl]-naphthalen-2-yl-methanone
- 25 [2-Amino-6-(2-chlorobenzyl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl]-naphthalen-2-yl-methanone
 [2-Amino-6-(3,4,5-trimethoxybenzyl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl]-naphthalen-2-yl-methanone
 (2-Amino-6-benzyl-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-thiophen-2-yl-
- 30 methanone
 (2-Amino-6-benzyl-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-thiophen-3-yl-methanone
 (2-Amino-6-benzyl-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(4-chlorophenyl)-methanone
- 35 (2-Amino-6-benzyl-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-naphthalen-2-yl-methanone

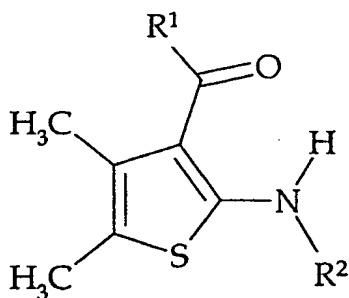
[2-Amino-6-(4-nitrobenzyl)-4,5,6,7- tetra hydrobenzo[b]thiophen-3-yl]-naphthalen-2-yl-methanone

- 5 [c12] A method for determining whether a compound is active at moderating adenosine receptors in a mammal, comprising performing competitive binding studies with the compound to be analyzed and a compound selected from a group consisting of compounds of formulas IA and IB:

(IA)

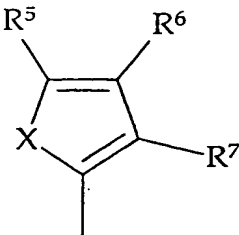


(IB)

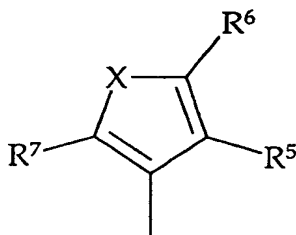


wherein:

R¹ is



or



wherein R² is H, C(=O)R⁸;

R⁸ is H, alkyl, substituted alkyl, aralkyl, substituted aralkyl, aryl, or substituted aryl;

R³ and R⁴ are independently H, alkyl, substituted alkyl, aryl, substituted aryl, aralkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, halogen, hydroxy, alkylsulfonyloxy, arylsulfonyloxy, substituted arylsulfonyloxy, alkoxy, alkylthio, or arylthio;

or if R³ and R⁴ are both alkoxy or alkylthio, may form a 1,3-dioxolan-2-yl, 1,3-dioxan-2-yl,

1,3-dithiolan-2-yl, or 1,3-dithian-2-yl group;

or together R³ and R⁴ may form a carbonyl oxygen;

R⁵, R⁶, and R⁷ are independently H, alkyl, substituted alkyl, aryl,

substituted aryl, halogen, hydroxy, nitro, amino, substituted amino, disubstituted amino, alkoxy, aryloxy, alkylthio, arylthio, sulfonamido, or substituted sulfonamido;

or together R⁵ and R⁶ or R⁶ and R⁷ may be CH=CH-CH=CH, such that they form a fused aromatic ring;

A and B are independently O, S, or N-R⁸;
or A and B may independently represent a carbon-carbon single bond;
m and n are independently 0, 1, 2, or 3;

except that A and B cannot both represent a carbon-carbon single

5 bond when m and n are both 0; and

X is CH=CH, CH=N, N=CH, O, S, or N-R⁸.

[c13] The method of claim [c12] wherein the compound is selected from
compounds of formula (IA).

10 [c14] The method of claim [c12] wherein the compound is selected from
compounds of formula (IB).

[c15] The method of claim [c12] wherein the compound is selected from the group
comprising:

- 15 (2-Amino-4,7-dihydro-5H-thieno[2,3-c]thiopyran-3-yl)-phenyl-methanone
(2-Amino-4,7-dihydro-5H-thieno[2,3-c]thiopyran-3-yl)-(4-chlorophenyl)-methanone
(2-Amino-4,5-dihydrothieno[2,3-b]thiophen-3-yl)-(4-chlorophenyl)-methanone
(2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-furan-2-yl-methanone
(2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-thiophen-2-yl-methanone
20 (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-naphthalen-1-yl-methanone
(2-Amino-4,5-dimethylthiophen-3-yl)-naphthalen-2-yl-methanone
(2-Amino-6-spiro(1,4-dioxolan-2-yl)-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(4-
chlorophenyl)-methanone
(2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-thiophen-2-yl-methanone
25 (2-Amino-4,5-dimethylthiophen-3-yl)-thiophen-2-yl-methanone
(2-Amino-6-hydroxy-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(4-chloro-phenyl)-
methanone
(2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-thiophen-2-yl-
methanone
30 (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(5-bromothiophen-2-yl)-
methanone
(2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-(5-bromothio-phen-2-yl)-
methanone
(2-Amino-4,5-dimethylthiophen-3-yl)-(5-bromothiophen-2-yl)-methanone
35 (2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-(5-bromothiophen-
2-yl)-methanone

- (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(5-chlorothiophen-2-yl)-methanone
- (2-Amino-5,6-dihydrocyclopenta[b]thiophen-3-yl)-(5-chlorothiophen-2-yl)-methanone
- 5 (2-Amino-4,5-dimethylthiophen-3-yl)-(5-chlorothiophen-2-yl)-methanone
- (2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-(5-chloro-thiophen-2-yl)-methanone
- (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-thiophen-3-yl-methanone
- (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-thiophen-3-yl-methanone
- 10 (2-Amino-4,5-dimethylthiophen-3-yl)-thiophen-3-yl-methanone
- (2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-thiophen-3-yl-methanone
- [2-Amino-6-(4-methoxyphenyl)-4H-1,5,7-trithia-inden-3-yl]-naphthalen-1-yl-methanone
- 15 [2-Amino-6-(4-methoxyphenyl)-4H-1,5,7-trithia-inden-3-yl]-(4-chloro-phenyl)-methanone
- [2-Amino-6-(4-methoxyphenyl)-4H-1,5,7-trithia-inden-3-yl]-thiophen-2-yl-methanone
- (2-Amino-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl)-(9H-fluoren-2-yl)-methanone
- 20 (2-Amino-5,6-dihydro-4H-cyclopenta[b]thiophen-3-yl)-(9H-fluoren-2-yl)-methanone
- (2-Amino-6-benzyl-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl)-(9H-fluor-en-2-yl)-methanone
- [2-Amino-6-[(methanesulfonyl)oxy]-4,5,6,7-tetrahydrobenzo[b]thiophen-3-yl]-(4-chlorophenyl)-methanone
- 25 (2-Amino-6-(4-chlorobenzyl)-4,5,6,7-tetrahydrothieno[2,3-c]pyridin-3-yl]-naphthalen-2-yl-methanone